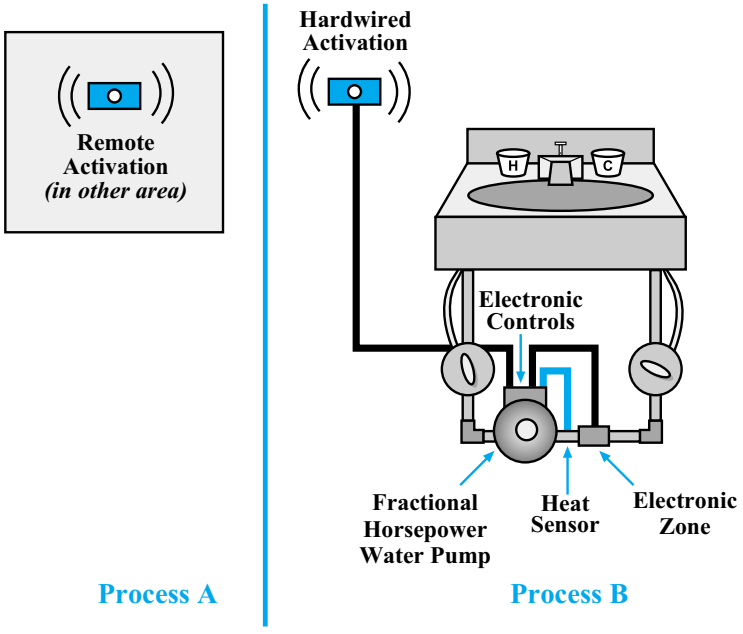
D'MAND® Hot Water Recirculating and Waste Prevention System

D'MAND System Reduces Water Heating Energy Requirements and Water Waste

In conventional potable hot water systems, water standing in the pipe is sent down the sewer drain until heated water arrives, wasting water. A conventional re-circulating system is also wasteful because unused, re-circulated, heated water rejects heat through the entire loop.

With the assistance of the Department of Energy's Inventions and Innovation Program, Advanced Conservation Technology (ACT), Inc., developed a novel system that conserves water and energy in water-heating systems. The Metlund® Hot Water D'MAND system returns water in the hot water pipe to the boiler or water heater through the cold-water line. The system employs a thermal sensor so the fixture demanding hot water only receives when the sensor observes a preset rise in temperature. Retrofit installations are simple because no additional return pipe to the water heater is required. In the residential D'MAND pumping system, the high-performance pump, integrated controller and electronic zone valve are located at the hot water fixture most distant from the water heater. In residential new construction, they are generally located at the water heater, but still operate on demand.

In industrial and commercial installations, each point-of-use fixture can be set up to operate manually, or can include motion detectors or flow switches so that circulation begins the moment a worker enters the facility. The system shuts off automatically when hot water is not needed. Commercial applications include doctor's offices, hospitals, veterinary clinics, kitchens, salons, day care facilities, and restaurants. Industries are using the system in factory tool shops, restrooms, and for periodic parts washing stations that use a second occupancy sensor to start the water stream when the parts appear under the faucet.



D'MAND Water Heating Sensor System

Overview

- Developed by Advanced Conservation Technology, Inc.
- Commercialized in 1991
- More than 33,000 units sold through 2003

Energy Savings

(Trillion Btu)

Cumulative through 2003	2003
0.604	0.115

Emissions Reductions

(Thousand Tons, 2003)

Particulates	SO_X	NO_X	Carbon
0.001	0.046	0.018	2.38

Applications

Can be used in single- and multi-family residential water heating systems, both retrofit and new construction; commercial and institutional water heating systems; and industrial process and service hot water systems.

Capabilities

Can be easily retrofitted into existing water heating systems regardless of fuel type and with tank and tankless water heaters.

Benefits

Natural Resources

Has saved more than 1.2 billion gallons of water through 2003.

Profitability

Reduces capital cost and operating costs compared with recirculating system. Has saved more than $15 million through 2003. Reduces standby losses and extends water heater life.

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